



THE UNIVERSITY *of* EDINBURGH

## Edinburgh Research Explorer

### The female entrepreneur's financial networks

**Citation for published version:**

Alakaleek, W & Cooper, S 2018, 'The female entrepreneur's financial networks: Accessing finance for the emergence of technology-based firms in Jordan', *Venture Capital*, vol. 20, no. 2, pp. 137-157.  
<https://doi.org/10.1080/13691066.2017.1345120>

**Digital Object Identifier (DOI):**

[10.1080/13691066.2017.1345120](https://doi.org/10.1080/13691066.2017.1345120)

**Link:**

[Link to publication record in Edinburgh Research Explorer](#)

**Document Version:**

Peer reviewed version

**Published In:**

Venture Capital

**Publisher Rights Statement:**

This is an Accepted Manuscript of an article published by Taylor & Francis in *Venture Capital* on 04 July 2017, available online: <http://www.tandfonline.com/10.1080/13691066.2017.1345120>.

**General rights**

Copyright for the publications made accessible via the Edinburgh Research Explorer is retained by the author(s) and / or other copyright owners and it is a condition of accessing these publications that users recognise and abide by the legal requirements associated with these rights.

**Take down policy**

The University of Edinburgh has made every reasonable effort to ensure that Edinburgh Research Explorer content complies with UK legislation. If you believe that the public display of this file breaches copyright please contact [openaccess@ed.ac.uk](mailto:openaccess@ed.ac.uk) providing details, and we will remove access to the work immediately and investigate your claim.



**The female entrepreneur's financial networks: Accessing finance for the emergence of technology-based firms in Jordan**

**Wejdan Alakaleek\***

**The Hashemite University**

**Zarqa - Jordan**

**E-mail: w.alakaleek@hu.edu.jo**

**Telephone: 00962 (0) 59303333**

**and**

**Sarah Y Cooper**

**University of Edinburgh Business School**

**The University of Edinburgh**

**29 Buccleuch Place**

**Edinburgh EH 9JS**

**Scotland, UK**

**E-mail: sarah.cooper@ed.ac.uk**

**Telephone: +44 (0) 131 651 5247**

**\* Corresponding author**

# **The female entrepreneur's financial networks: Accessing finance for the emergence of technology-based firms in Jordan**

## **Abstract**

In this paper we focus on how female entrepreneurs in Jordan finance the establishment and early growth of their technology-based ventures. Previous research exploring the experiences of female entrepreneurs, undertaken primarily in Western, developed countries, had emphasised their early reliance on informal capital, sourced via personal networks, acquaintances, friends and family. Little was known, however, about the experiences of women in developing economies, such as the Middle East, where they represent a growing proportion of the educated and entrepreneurial populations, albeit from a small base. The study discussed here investigated the entrepreneurial journey of the female founders of 16 technology-based firms in Jordan, adopting a network perspective to explore how they accessed sources of finance and investigate the dynamic nature and characteristics of their financial ties, from start-up through to early-growth. Our findings show how, compared with their western counterparts, these Jordanian women adopt a very different approach to venture funding from the start, relying more heavily on formal sources and networks. In securing funds from formal business networks ties, they leverage benefits from connections established via formal events and networking platforms to facilitate development of their financial network ties at a very early stage.

**Keywords:** female entrepreneur; sources of finance; start-up capital; technology-based firms; networks; Jordan.

## **Introduction**

Entrepreneurship and the emergence of new firms are of significant importance to economic growth and job creation and this is particularly the case in new technology sectors which are not only major economic contributors in their own rights but also play an increasingly important role within many economies, with their products and services underpinning innovation within many other areas of the primary, manufacturing and service economy (Oakey 2012). In starting such firms, access to the necessary resources can be a real challenge for entrepreneurs, in part due to the liability of organisational newness, and their limited legitimacy, knowledge and search ability for resources providers (Hite and Hesterly 2001). Among these resources, financial capital represent a particularly crucial element in venture creation and the sustained success of the newly established firm (Steier and Greenwood 1999).

Appropriate financial capital is important for the new and growing venture, and the ability to identify and acquire resources in a timely manner will influence venture development and growth (Berger and Udell 1998). The availability of financial resources is considered as an important indicator for increasing the rate of entrepreneurial activities (Gupta and York 2008) as the basic assumption is that an entrepreneur with good access to financial resources has a higher chance of success in any economy (Cetindamar et al. 2012). The successful mobilisation of financial resources can provide vital 'fuel' to support the development of entrepreneurial activities but a range of factors will influence the entrepreneur's ability to identify and secure those resources, such as the nature of their social capital networks and the local availability of

funding. Generally, the need for funds is not constrained to the start-up stage: entrepreneurs continually need additional funds for successful business survival and growth (Steier and Greenwood 2000, 1999). Thus, to ensure successful entrepreneurial entry and survival, different sources of capital and capital structures are required at various stages of the business development process (Berger and Udell 1998).

Network ties have been widely acknowledged as a vital vehicle through which the entrepreneur may access and acquire the necessary resources for entrepreneurial activity (Larson and Starr 1993). These ties tend to be dynamic in nature, evolving over time to address the firm's changing resource requirements (Greve and Salaff 2003; Hite and Hesterly 2001). The network of ties has been analysed from different perspectives (Steier and Greenwood 1999): for example, some studies focus on inter-organisational ties (e.g. Capaldo 2007; Lechner and Dowling 2003), while others focus their analysis on the ego-network (e.g. Hite and Hesterly 2001). Consequently, and consistent with previous work on the entrepreneurial network, this research focuses on exploring the female entrepreneur's ego network for financial resource acquisition and analysing the network ties which she builds with external actors, including individuals, firms and other organisations.

A network is built upon blocks of ties (Jack et al. 2004), where understanding the nature of these ties represents the first step in analysing the entrepreneur's ego-network (Hite 2005). Thus far, and despite the importance of network ties in understanding the female entrepreneurial process, the composition of the nature and content of these ties has not been explored fully. Therefore, this paper reports the findings of research which seeks to provide greater insights into these aspects through an analysis of the dynamic nature and characteristics of the network ties of Jordanian female entrepreneurs who have established technology-based firms. The objective is to enhance understanding of the nature and dynamics of these women's networks and the role they play in accessing and acquiring the financial resources within one of the Middle Eastern societies, where the socio-economic context within which women build their careers has a potentially significant impact on the networks from which they draw these resources. The aim is to contribute to the literature on the development and use of network ties, and women's approaches to venture funding in a developing economy context.

## **Literature review**

### ***Networking for resource acquisition***

The entrepreneur's network comprises 'a set of actors connected by a set of ties' (Borgatti and Foster 2003, 992), where dyadic ties connect the focal individual (ego) to people, firms and organisations to create a so-called 'ego network' (Witt 2004; Wasserman and Faust 1994). It reflects an individual's ties that he/she seeks to build with other actors (Hampton et al. 2009). Studies in network analysis emerged as a new field of inquiry within the entrepreneurship literature in the 1980s (Hoang and Antoncic 2003). In 1985, Birley's study found that numerous resources, money, information, advice and industry endorsements, can be accessed through both 'informal' ties, which include family and friends, and 'formal' ties, such as banks, lawyers, companies, local government and small business administration.

In studying the entrepreneurial firm, Birley and Cromie (1988) identified two key aspects of networks: first, an entrepreneurial firm is required to gather resources from external sources. Second, the entrepreneur usually uses his/her personal networks to access these resources. Under these conditions, new firm formation is described as a 'processes by which the essential relationships between an entrepreneur and resource providers evolve to create an organization' (Larson and Starr 1993, 5). In addition, firm growth is more likely to be accommodated through dependence on the firm's resource contacts (Jarillo 1989). Building on the resource acquisition perspective, many scholars have analysed the entrepreneurial process (e.g., Sullivan and Ford 2014; Hite and Hesterly 2001; Butler and Hansen 1991). They argue that entrepreneurs do not have enough resources and usually face resource acquisition challenges (Hite and Hesterly 2001).

Network-based researchers have analysed the entrepreneur's network from different explanatory angles, including the structuralist and connectionist perspectives (Borgatti and Foster 2003). At the individual level, studies focus on investigating the configuration or structure of ties in the personal network (Burt 1992) by examining network size, density, diversity, centrality, reachability and strength of ties (Hampton et al. 2009; Hoang and Antoncic 2003; Dubini and Aldrich 1991). The focus of connectionist studies is on the benefits that can be acquired through network ties (Borgatti and Foster 2003). These connectionist studies have examined the structural characteristics of networks that help in accessing critical resources for the venture (Semrau and Werner 2014; Martinez and Aldrich 2011; Hampton et al. 2011; Capaldo 2007; Hite and Hesterly 2001; Steier and Greenwood 1999), including: financial capital (Hanlon and Saunders 2007; Steier and Greenwood 1999); human capital in the form of knowledge and information (Semrau and Werner 2014; Johannisson 1998; Coleman 1988); establishing firm legitimacy (Batjargal 2010; Moensted 2010); and building other networks (Söderqvist and Chetty 2013; Semrau and Werner 2014; Martinez and Aldrich 2011). Other studies have examined the role of the individual's formal and informal ties in the venture creation process (Birley 1985) and types of the entrepreneur's network ties and their benefits (Jack et al. 2004; Lechner and Dowling 2003). The current study builds upon an argument that female entrepreneurs' network ties develop prior to and during the early development stages of the firm and entrepreneurs utilise network ties to address different resource dependency issues at each stage of the firm's development. In gathering these resources the entrepreneur, as a focal actor, depends on using others actors' resources in the external environment (Timmons and Spinelli 2009; Hite 2005).

### ***Women's financial capital***

Within the female entrepreneurship literature, studies indicate that women tend to acquire the necessary financial resources from a combination of formal and informal investors (Romani et al. 2012; Brush et al. 2001). Formal financial sources include venture capital organisations, business angels, banks and other institutions which provide capital such as government agencies and foundations. By contrast informal financial sources, that support the core early entrepreneurial activities, include immediate family, other relatives, friends and acquaintances (Romani et al. 2012; Bygrave and Quill 2007). Many studies have shown that informal financial sources provide the start-up funds for the majority of firms started by female entrepreneurs (Romani et al. 2012; IFC and CAWTAR 2007; Brush et al. 2001). At the start-up stage, the low legitimacy, high uncertainty and risk that are associated with new ventures

have been identified as the main reasons affecting entrepreneurs' accessibility to formal financial sources (Kim et al. 2006; Hite and Hesterly 2001; Starr and MacMillan 1990). As female entrepreneurs focus on growing their businesses they become less likely to rely on informal financial sources, tending instead to turn to more formal sources of financial support (Brush et al. 2001).

Gender comparison studies have found that during firm creation both male and female entrepreneurs use the same sources of funding, with women more dependent on family members than bank loans and credit (Romani et al. 2012; Carter and Rosa 1998). Carter and Rosa (1998) found that women entrepreneurs' use of grants and government assistance is higher, relative to their male counterparts. In a study of more than 2,800 Canadian entrepreneurs, Orser et al (2006) revealed that female entrepreneurs are less likely to attract external finance, such as venture capital, commercial debt and supplier financing. While women tend to experience difficulties in securing business angel and venture capital funding to support venture creation and growth (Orser et al. 2006; Brush et al. 2002), those who successfully access external finance early in the start-up process raise significantly lower amounts of both equity and debt finance than men (Coleman and Robb 2009).

A number of reasons are identified to account for such patterns. First, low levels of external financing may be associated with the sectors which women enter, as female entrepreneurs tend to establish their businesses in areas considered unattractive and less valuable by venture capitalists (Orser et al. 2006). The lower profitability and growth of the women-owned businesses leads to a reduction in the likelihood of them obtaining external investment (Coleman 2002; Coleman and Robb 2009; Robb and Coleman 2010). Second, the amount of capital that female entrepreneurs invest in their new business ideas might have an affect (Carter and Rosa 1998) as they tend to invest lower amounts in the start-up stage compared with men (Carter et al. 2001): this in turn disadvantages them when it comes to attracting equity investments (Carter and Rosa 1998). Consequently, men are at an advantage in the long-term through the greater ability of their businesses to attract higher levels of external investment (Carter and Rosa 1998). Third, women experience greater difficulties in defining, finding and accessing the necessary formal and informal networks (Gatewood et al. 2009). Female technology entrepreneurs often lack the types of network relationships which would help them to access external financial capital (Robb and Coleman 2010; Coleman and Robb 2011). Women's lack of previous managerial experience, particularly with respect to financial affairs and business negotiations, can result in their exclusion from relationships which could be built upon during their career to connect them with formal and informal financial resource providers (Robb and Coleman 2010; Brush et al. 2002). However, female entrepreneurs in some economies, such as in the United States of America, have demonstrated their ability to establish high growth ventures which have attracted many equity investments (Gatewood et al. 2009; Brush et al. 2002; Brush et al. 2001).

### **Entrepreneurship in Jordan's technology sector**

Jordan is among the most open economies in the Middle East and North Africa (MENA) Region, having implemented since the early 1990s numerous reforms to restructure

the country's economic activities, such as encouraging privatisation, reducing trade tariff barriers and signing up to a number of trade agreements (Majcher-Teleon and Slimene 2009). Based on a range of indicators, the Global Competitive Report 2013-14 has categorised Jordan's economy as an 'efficiency driven' economy, with significant opportunity for improvement, due to its current low ranking in information and communication technology (ICT) use (Schwab and Sala-i-Martin 2013). During the last decade, notable improvements have been seen in Jordan's technology sector, where reforms have been undertaken to improve the physical and intellectual infrastructure of the sector (Majcher-Teleon and Slimene 2009). Thus, opportunities are emerging, especially, in the ICT sector, as a result of factors including liberalised telecommunications, increased infrastructure accessibility, increased government support and the creation of an enhanced ICT regulatory framework (Al Jidara 2007). These efforts have helped the country to become the regional leader in adapting, developing and utilising ICT (Ministry of ICT 2013 - National ICT Strategy 2013-2017).

Despite developments which have opened up its economy and created a favourable business environment (Miller et al 2011), official figures show that Jordan suffers from high unemployment rates, ranging from 10.9 per cent among men to 19.1 per cent among women (Jordanian Department of Statistics 2015). Broad agreement exists about the key contribution that entrepreneurial activities can make to economic development and job creation (Robb and Coleman 2010), thus, job creation for a youthful population is one of Jordan's first priorities. Increasing the prevalence of entrepreneurial activities represents a significant opportunity for Jordan, where an investment in developing a more entrepreneurial culture among young people and facilitating would-be entrepreneurs' entry and growth could bring significant benefits.

Analysis of the country's engagement in entrepreneurial activities, particularly in the technology sector, reflects some recent improvements. The country has introduced regulatory reforms to make business registration for entrepreneurs easier and less costly (World Bank 2012a, 2013). The World Bank Reports show that aspects of the process required for starting a business have changed and improved, with the greatest changes being reductions in the minimum capital requirement and cost to complete business start-up procedures, and creation in 2010 of a single reception service for business registration.

The country's technology sector saw progress between 2000 and 2012, particularly in ICT, as its contribution to Jordan's Gross Domestic Product (GDP) reached 14% (Intaj 2013). This sector is responsible for a significant share of technology start-ups, with over 50% of Jordan's start-ups in sectors such as IT, mobile and online businesses, electronic publishing and telecoms. In addition, around \$15,000 million of foreign direct investment was attracted by the ICT sector in 2010 (Intaj 2013).

In terms of the development of individual entrepreneurs, the sector has witnessed recently involvement from a number of government and non-government bodies focused on developing technology entrepreneurship in the country. These bodies have helped to enable start-ups through support of informal education sources, such as seminars and networking events, and related training, consultancy and mentoring, making the country a more supportive environment in which to launch a technology start-up. Although Jordan has been recognised

as a haven for entrepreneurs in the MENA Region (FYCL and BC 2011), due to the developments in its entrepreneurial ecosystem, Jordan's engagement in entrepreneurial activities is still relatively new, and many aspects of the ecosystem are still underdeveloped.

The low percentage of female technology entrepreneurs is the main challenge, particularly as around half of students graduating from university in technology, engineering and science are female: in 2012-13 48% of the student population graduating from science, computer science and engineering programmes were women (MHESR 2013). Generally, 5.3% of businesses are owned by women, compared to the 94.7% owned by men (MPIC and UNDP 2011). The low rate of female entrepreneurial participation in Jordan suggests significant underutilisation of human and national resources, particularly as a sizeable number of economically-inactive women are well-educated (Peebles et al. 2007). In attempting to understand their low level of involvement in entrepreneurship, financial capital availability and accessibility are frequently cited as the main challenges faced by (would-be) female entrepreneurs (World Bank 2012b; Stevenson et al. 2010; Chamlou 2008; IFC and CAWTAR 2007; World Bank 2005), with average start-up funding requirements for Jordanian enterprises being the equivalent of around US \$14,200 (Stevenson et al. 2010). Whilst the limited degree of financial mobilisation represent a challenge for female entrepreneurs, women in Jordan and other MENA countries do not benefit from the same sort of access as their western counterparts to sources of financial start-up and growth capital, such as government support, credit cards, various kinds of loans (Cetindamar et al. 2012) and business angel investment (Women's Business Forum 2011). Difficulties include both supply- and demand-side factors (Women's Business Forum 2011).

On the supply side: first, dependence on personal savings to secure finance for start-up or growth is difficult due to the low per capita income, which in 2013 was \$11,782. This is relatively low compared with other countries in the Region, such as Lebanon where it is \$17,170 (World Bank 2015). Secondly, there is limited availability of the main sources of external finance, including both debt and equity financing in the MENA Region (Women's Business Forum 2011). For debt financing, the Region depends mainly on formal bank lending and is characterised by limited development of its financial market (Women's Business Forum 2011). The supply of formal loans is limited and does not cover the entrepreneurs' needs (World Bank 2012b). The limited availability of private finance for starting new ventures and supporting small and medium-size businesses is constraining some sectors, particularly in technology (World Bank 2012b).

While entrepreneurs in Jordan, whether male or female, face financial mobilisation challenges, it is reported that female entrepreneurs suffer to a great extent from the limited availability of finance (IFC and CAWTAR 2007; World Bank 2005). Most studies show that this is because female entrepreneurs depend to a greater extent than men on formal financial sources and resources to fund their businesses, particularly banks, personal and micro-finance loans (Chamlou 2008). A World Bank Report revealed that 14% of new investments in entrepreneurial firms established by women in Jordan are financed by commercial banks or through other formal resources, such as leasing arrangements, investment funds or credit cards (even though accessing such cards is harder for women), compared with just 4% for male-owned businesses, which depend to a great extent on internally-generated returns (Chamlou



2008). Women often lack sufficient collateral to access formal loans (World Bank 2012b; World Bank 2005). This is mainly influenced by social norms, particularly property ownership traditions which mean that although a woman is allowed to own property, if she is married it tends to be her husband who owns it, meaning she cannot use it as security (Women's Business Forum 2011). Bank lending criteria and practices have been found to introduce bias against women entrepreneurs (Carter et al. 2007): similarly, many of the Region's countries' bank lending practices impose barriers (Women's Business Forum 2011) such as having to include her husband's signature to ensure her activities are not at odds with her family's wishes (Chamlou 2008). The nature of Jordan's society is collective and builds on family cohesion: indeed, members of the society respect and cherish this kind of collective relationship and encourage women's economic independence, as long as it does not affect family cohesion and ties (Al-Alak and Al-Haddad 2010).

In terms of equity finance, the presence of business angels in the Arab World in general is still limited and at an early development stage (Siam and Rifai 2012). In Jordan, for example, there are 23 angels, 17 of whom are businessmen, three are businesswomen and the remaining three are companies (Siam and Rifai 2012); they provide finance to the value of about one million dollars to several projects in the early stages of development (Siam and Rifai 2012).

On the demand side, first, there is a limited focus within families on encouraging entrepreneurial attitudes, particularly amongst daughters (Al Jidara 2014), and observers argue that the level of entrepreneurial education and training among women in the Region is weaker than of men: in particular they lack training and experience in financial management (Women's Business Forum 2011; Al Jidara 2014). Secondly, the MENA Region's female unemployment rate is much higher than that of men, with women holding primary responsibility for family care. Thus, many women establish small-scale or part-time ventures as an alternative to unemployment, which require relatively little capital and are operated at a level which enables them to balance work and family commitments (Women's Business Forum 2011).

### **Research design and data**

Research on the development of female entrepreneurs' financial network ties, particularly within developing, eastern societies, is relatively limited, thus, this research seeks to explore the role of network ties in the acquisition of financial resources by female technology entrepreneurs in Jordan during the early development and business growth stages. In this exploratory study we adopted a qualitative research approach, using an in-depth interview method, in order to develop a deep understanding of the nature and structure of entrepreneurial networks and constituent ties, and how entrepreneurs utilise those ties in order to access start-up and growth capital (Blaikie 2009; Eisenhardt and Graebner 2007).

### ***Research sample***

The findings draw on in-depth interview data derived from 16 female entrepreneurs who have created, own and manage a technology-based firm. The female entrepreneurs were chosen for interview on the basis of theoretical sampling (Eisenhardt and Graebner 2007). A list of possible participants was developed based on personal contacts with economic agencies,

support organisations and individuals in Jordan. The potential interviewees were telephone and email screened to establish their eligibility according to the research criteria, which included responsibility for firm creation, ownership and management, technology industry and firm development stage. This process of theoretical sampling produced 16 female entrepreneurs who were eligible and willing to take part in the study.

All the female entrepreneurs owned, created and managed technology-based firms and they had hired their first employee and (or) sold their first commercial product/service. Table 1 provides further details of the research participants. The female-owned technology ventures investigated range from the start-up to early-growth stage: all had operated for less than seven years. These ventures represented different technology areas, including software, animation, digital content, mobile applications, web services, engineering activities and technical consultancy, technical testing and analysis, electronic device and ICT consultancy. The participants' age when they started their business ranged between 23 and 49 years, and most of them had related prior experience.

[Table 1 near here]

### ***Data collection***

The data were derived from the female entrepreneurs' accounts of the creation and development of their firms, with a focus on the evolution of their financial network ties. Participants took part in a two-stage interview process, with each interview lasting between 50 minutes and an hour and a half, with interviews recorded to assist with later analysis. The method adopted facilitated extraction of data from interviewees in a chronological manner about their networking activities during the creation and early growth of their firm. Questions were asked about the types of funding used at different stages of development, including who was contacted regarding securing financial resources, and how and when they were contacted. The main objective was to obtain the story explaining their journey to access and acquire funds for their firms' early development. The data permitted exploration of the characteristics of the female entrepreneurs' networks and development of their financial ties.

### ***Data analysis***

When analysing qualitative data, eliciting the essence of a huge amount of material requires implementing a rigorous and systematic approach (Whittemore and Knafl 2005; Miles and Huberman 1994). Reducing the amount of raw research data involves 'selecting, simplifying, summarising and transforming' data (Miles and Huberman 1994: 10). This process of data reduction helps to sharpen and manage the data in a way which facilitates drawing and verification of conclusions. When data were collected the research interviews were taped, transcribed and then analysed to determine the key categories and themes. Analysis was facilitated through use of NVivo software to help organise the data in a more effective way. Initial themes from the data were generated to help understand the networking activities of the participants. These were then clustered into nodes which aided identification of connections, pointing to core insights around key themes of financial network characteristics and their dynamic nature. In the start-up and early-growth stages the founder's network is critical for firm development, so the focus was on analysing the female entrepreneur's ego network as in the early stages of firm development the individual and firm networks tend to be synonymous.

Thus, analysis is presented at the level of the founder and her financial ties to others (individuals or firms) (Witt 2004). On the other hand, in understanding the network development processes of the participants, the study applied a finely-grained analysis to allow the researchers to link the network characteristics to the stage of development and explore the female entrepreneur's financial ties at each stage of the process. This analysis examined activities in which participants were involved and identified the extent to which they were representative of the start-up phase or later more growth-oriented stage. The business development characteristics that appear to differentiate the start-up stage include business idea development, product/service development, seeking the intellectual resources for start-up, developing the business plan and market analysis (Kazanjian and Drazin 1990; Ruhnka and Young 1987), recording the first sales and (or) first full-time hire (Reynolds and Miller 1992). The characteristics and activities distinguishing the early-growth stage include marketing and sales in volume and some formality in the business structure (Kazanjian and Drazin 1990; Ruhnka and Young 1987). As will be seen in the Results section, when analysis of the complete interview transcripts was undertaken five firms, A, B, G, M and Q, demonstrated activities typical of start-up ventures. The other eleven demonstrated characteristics of the start-up and early-growth stage.

## **Results**

In examining the financial network and its development, three chronological network development stages emerged from the data related to initial funding, later start-up finance and early-growth funding. These financial network development stages were reflected in the female entrepreneur's network ties that were approached and relied upon, from start-up to early growth to secure financial resources for their firm. Table 2 outlines the stages of development of the participants' financial networks.

[Table 2 near here]

### ***Initial start-up funding***

The research participants were divided in the early days of their firm's creation between those who used the personal saving of the owner, and those who located formal sources of finance through connecting with new actors (Table 2). Six of the founders who self-financed their ventures used their personal savings to start their businesses: three customer-based firms explained that the amount of money required to start was not very large, while in the other cases start-up depended more on money saved whilst in their previous employment. Two female entrepreneurs depended upon capitalising on their knowledge to generate revenue from consultancy services projects in the early days and then reinvested the money obtained from these first sales. One founder obtained a prize from private sector and not-for-profit organisations

Founders of the other seven firms accessed financial resources through building ties with new external contacts, obtaining funds through equity financing, mainly from angel investors, venture capitalists and accelerator seed funds. For these firms there was evidence that their financial network ties were dominated by formal business ties. Business ties were based on professional bonds and included ties with other entrepreneurs, CEOs and managers, mentors,

professionals, business partners, investors and business agencies (business support organisations, incubators and accelerators). It is noticeable that the formal financial sources utilized by the entrepreneurs at this stage were mainly equity-based, providing initial accelerator seed funding; for example, *‘They financed, [business agency X] put in ten percent of the company and they paid for it’* (C); venture capital *‘what happened was that when [venture capitalist X] came to know me through [firm Y], they said we want to establish a new company in Jordan, how about you joining us’* (Y). By contrast, some entrepreneurs used competition prize money: *‘The thing is that we got started after I won the [organisation Z] competition and we got the first funding from this competition, and then we got started’* (M).

When the female entrepreneurs searched for financial resources to start their businesses, they identified business ties as a more suitable source for obtaining the resources they lacked. Most often these ties were reached directly, as participants used direct contact to approach their initial funding sources. Although reliance on business ties for start-up funding was not the main source for some entrepreneurs, for others these ties were the first avenue explored. For example, participants commented: *‘Actually, I depended on competitions and grants because it was the only option I had at that time’* (M); *‘The main problem in starting the business was finding funds, we needed money to start ... so, we went to [organisation X] but we did not get anything ... then we applied to [accelerator Y], where we were one of the five firms that got accepted for investment’* (E); *‘Before I went to [business agency X], I had no money. Ok, my husband would support me with one, two hundred, but for how long? So, I was looking for financial resources and I went to them’* (W).

### ***Later start-up funding***

Over time these firms transitioned from the initial start-up towards the early-growth stage, at this point most participants approached new external actors, directly and indirectly, to obtain financial resources. This first move after using initial funding was focussed on contacting business network ties. Many participants were able at this stage to attract new financial resources to fuel the later stage of start-up (see Table 2), mainly from formal sources and funds accumulated by the entrepreneurs. Formal sources provided mainly equity finance, with business agencies offering seed funding and angel investors providing investment capital: e.g.: *‘from an angel investor and he is a Jordanian businessman. He is the major investor and I have another angel investor, he has a very small share of the company’* (B). Some entrepreneurs used awards or grants from private sector and not-for-profit organisations: e.g.: *‘I got twenty thousand dollars as an award from [Firm A]’* (G) and: e.g.: *‘There are some donor agencies or projects in Jordan, [donor agency X], for example, I took some money [grant] from [donor agency X] to finance the first batch of [the product]’* (N). At this stage, through events held by the incubators and accelerators, the incubatee entrepreneurs had the opportunity to meet investors from within the market. This helped some participants obtain angel investment in their business models. As Entrepreneur B commented: *‘I presented at what they call the angel investment networking event ... where the objective is to put start-ups with angel investors. So I received angel investment funding and I met an angel investor through this event’*. In fact, at this stage most angel investments were secured by the incubatee rather than independent entrepreneurs.

The newly established business network ties provided information about potential financial sources, which helped the female entrepreneurs identify and/or access some financial ties. At this stage these business ties gradually started to increase to include mentors, managers and CEOs, and other business agencies who helped those entrepreneurs to identify and (or) reach actual or potential financial sources. Thus, newly created business network ties were utilised to reach and access financial sources to a greater extent than personal ties. While the female entrepreneurs' personal network ties, family, friends and previous work acquaintances, acted as a source of emotional support, very limited financial resources were accessed through them. An important similarity demonstrated among most of the female entrepreneurs was the limited reliance on their personal ties to secure their start-up financial resources. For example, Entrepreneur H's comment on her family's involvement was typical: *'Family, not really ... not much, they didn't support much, no, not financially'*.

### ***Early-growth funding***

The female entrepreneurs' network ties grew as their firms moved into the early-growth stage, where they reached out to new financial ties and potential investments indirectly. Some of the business ties developed at the start-up stage played another role by providing access to potential financial resources and business partners during the early-growth stage. At this point, five of eleven<sup>1</sup> firms which had progressed to this stage were able to access new financial resources to fuel their early growth. All five secured equity funding: founders of two firms attracted angel investors whom they met through networking events and business acquaintances; one founder attracted a venture capitalist whom they accessed via a networking event; one founder obtained a second round investment from a business agency to grow her business and enter new markets; and one was able to secure angel investment and obtain second round investment from a business agency (see Table 2).

Six of the eleven entrepreneurs, however, were still searching for new financial resources amongst and through their business ties. Entrepreneur H commented:

*'we're currently talking to several investors about the possibility of them investing in the company, so, the formal network again, we work, we try to find someone and if we don't know the person directly, we talk to someone who knows them'*.

It is evident from Table 2 that some ventures, specifically D, H and F, were still looking for new funds during the early-growth stage. In addition to the funds that business partners and investors brought to their firms, female entrepreneurs were looking for strategic partners for business development. Entrepreneur F explained:

*'Most of those that are working have a business or have investments, told us that if you have some money to start don't go for investment ... [X] the founder of [firm Y] he told my business partner "if you are able to stand on your own feet, don't go for investment" ... now we are looking for investors, but not just for money, we need someone who has good relationships and this is very important for us'*.

The growing diversity and reachability of the female entrepreneurs' network facilitated the development of their financial ties. Interestingly, through the transition period into the early-

---

<sup>1</sup> Analysis of five firms, A, B, G, M and Q, showed them still to be in the start-up stage as there was no evidence of them having moved to the early-growth stage.

growth stage networking platforms and events, including conferences, competition, seminars and regular events organised by some business agencies, were places which facilitated access, directly or indirectly, to financial ties. The female entrepreneurs were able to diversify their network ties and build connections with business and market ties through participating in these events. For example:

*‘This is more related with events, usually, during events we met many people, for example, when we went to the Arab Content Conference, [CEO] came and he introduced himself ... when he came to Jordan, we met and then he introduced us to investors especially from Lebanon’ (F).*

Meanwhile Entrepreneur P noted:

*‘Maybe our [X] investor ... [business agency X] picked five companies to do a presentation, so, I presented and he came to me and he said your company is interesting ... so, this was an introduction that I wouldn’t have ever thought of, for me traditionally we all go to the same investors, I mean, the big names and we don’t know the small names. So, this introduction to our investor was different, without [business agency X]’s event I would never met him’.*

## **Discussion**

Analysing the entrepreneurs’ network ties plays a valuable role in providing a greater understanding as to how entrepreneurs reach and obtain resources needed for business creation and growth. Financial resources are one of the main types of network content which entrepreneurs profit from using, and building their ego-network ties can facilitate such access. The female entrepreneurs’ network development model for resource acquisition is not well understood in developing contexts. Knowing more about how Jordanian women engage in networking to secure financial resources for their firms’ creation and growth can help inform policy interventions as well as further understanding by identifying how female entrepreneurs build their network ties to reach and acquire financial resources, particularly within this as yet unstudied context. We have explored how female entrepreneurs from Jordan’s technology sector develop their networks through the start-up and early-growth stages of development of their technology-based ventures to establish connections with financial sources. The data reveal the characteristics of those entrepreneurs’ financial networks during these early development stages.

In studying the nature of the financial network ties, business network ties appeared to be the main source from which the female entrepreneurs derived finance during the firms’ initial and later start-up stages. Whilst some women self-financed their firms using their own funds, in the form of personal savings (Robb and Coleman 2010) and internally-generated returns, others utilised their network ties to obtain debt financing, mainly in the form of loans from banks, and equity financing, mainly from angel investors and venture capitalists (Robb and Coleman 2010) and business accelerators. The study revealed that when women do not have or use their personal saving in the early start-up stage, they primarily approach business ties to secure the necessary financial resources. Their financial ties show gradual, increasing diversity over time as they add new sources of finance which included angel investments, grants and awards.

Whilst personal ties were present within the entrepreneurs' networks throughout they played a very limited role in providing financial resources to build and grow their businesses. Instead, financial ties which stemmed from their business network were prominent throughout, providing both start-up and early-growth stage funding.

The female entrepreneurs used their own funds and raised equity finance to support their ventures during the start-up and early-growth stages with no dependence on debt finance. At the initial and later start-up funding stages, the ability to reach out to others stemmed from a few directly-established business contacts, where these contacts provided access to others actors as time went on. Business agencies and their channels and networking events appeared to be important gateways in building the entrepreneurs' financial network ties. The ability to reach out through different actors increased during the start-up stages, for both incubatee and independent entrepreneurs. Different type of events (i.e. conferences, exhibitions, seminars, competitions and accelerator angel investor events) and the actors that those entrepreneurs met through these events were the crucial gateway to access new or potential financial sources. These sources included grants, prizes, angel investors and venture capitalists.

These data which suggest that the extent to which these female entrepreneurs draw on personal ties or use debt financing from start-up onward is very limited are in marked contrast with evidence from the mainstream entrepreneurial network development literature, derived from studies of western women. Those studies indicate that personal ties, including family, friends and previous work colleagues, are the main source of finance for female entrepreneurs at the start-up stage (Semrau and Werner 2014; Hampton et al. 2009; Lechner and Dowling 2003; Hite and Hesterly 2001; Larson and Starr 1993). While some studies have mentioned the increasing role of business ties at start-up, informal personal ties are still identified as an important source for securing resources, particularly finance (Elfring and Hulsink 2007), either directly or indirectly through other actors (Steier and Greenwood 2000, 1999).

An explanation for this difference can be related to the Jordanian context and influenced by certain socio-economic characteristics. The Global Entrepreneurship Monitor's MENA Region Report indicates that Jordanian entrepreneurs are less likely to secure finance from their family members (Stevenson et al. 2010). Using informal sources to secure seed funding is sometimes difficult in Jordan, especially with the low GDP per capita, which in 2014 reached \$11,496 (tradingeconomics.com, 2016). Moreover, the World Bank Report found that female entrepreneurial firms in Jordan use formal resources to finance their business more so than their male counterparts (Chamlou 2008). This suggests that women tend to use the business links in their network to secure the necessary financial resources to start their business. On the other hand, women entrepreneurs still feel the effects of social stereotyping that sees their economic role as a traditional rather than professional one (MPIC and UNDP 2011; Fariz 2002). This suggests that in seeking resources and help female entrepreneurs in Jordan prefer direct formal contact with and through business ties to evidence and prove greater professionalism.

In the context of the development of reachability within the female entrepreneurs' financial networks, it appears that the women approached different business ties in the initial funding stage; however, over time they were more able to grow the reachability of their network ties and access indirectly new financial ties and contact potential sources of funding. Formal events,

conferences, seminars, competitions and networking gathering, played an important role in facilitating access to their financial ties as well as gaining knowledge of and identifying potential sources. The network contacts that were created through associations, such as industry organisations, clubs and networking events, help entrepreneurs to diversify the types of actors in their network (Martinez and Aldrich 2011) and increased their reachability to new actors. Previous research has illustrated that engaging with networking associations is important in building and promoting connections between entrepreneurs and actors within the sector (Martinez and Aldrich 2011; Spence et al. 2003). Findings of this research suggest that participating in such events enhances the female entrepreneur's visibility and adds credibility to their ideas and start-up venture, which could help them to attract financial resources and additional potential investors.

The study also reveals that these female entrepreneurs finance their venture at the initial start-up-stage using their own funds and external equity investment rather than debt funding. This might be influenced by the limited availability of formal loans for entrepreneurs (World Bank 2012) and by the fact that women's accessibility to these formal loans is often limited by their lack of sufficient collateral (World Bank 2012b; World Bank 2005) and bank lending practices which create additional barriers (Chamlou 2008). The religious context also may influence the decision not to opt for debt-based financing. Most banks provide interest-based loans which are not compliant with the Sharia finance framework which does not permit acceptance of interest for money lending. The decision not to use interest-seeking debt finance avoids conflict with their faith.

On the other hand, recent development of the Jordanian entrepreneurial eco-system, particularly focused around the technology sector, is enhancing the availability of new alternatives such as seed funding, angel investment and venture capital. A number of Jordanian government and non-governmental bodies have been involved in developing technology entrepreneurship through changes in the physical and intellectual infrastructure of the sector (Majcher-Teleon and Slimene 2009). These bodies have helped to improve the entrepreneurial environment, making it increasingly attractive to domestic and international companies; for example, the country attracted around US\$15 million in foreign direct investment in 2010 (Intaj 2013). These improvements have also created a more supportive environment and enabled start-ups by increasing the number of seminars and networking events, angel investor networking events, and availability of related training, consultancy and mentoring activity.

## **Conclusion**

This study has contributed to our understanding of the female entrepreneur's network development model through the results of exploratory, empirical research. It provides new insight into how women in eastern societies fund the start-up and early growth of their ventures, highlighting which networks ties and characteristics are of particular importance. In contrast with previous western-based research, this work has revealed the relative importance of formal, business ties who were approached by female entrepreneurs at the start-up stage and were then utilised heavily over time to identify and access financial sources. While some understanding



is provided of the dynamic nature of the female entrepreneur's network, research on the development process relating to their network ties is still limited and requires further study.

Although this research revealed that these entrepreneurs rarely drew on personal ties for financial resources to develop their technology-based firms, further research in Jordan, focusing on other sectors, would help to show whether or not there were any industry effects in operation. Also, it is important that future research explores male entrepreneurship in technology ventures in Jordan to explore any possible gender effects in the development and use of networks for resource acquisition.

The research findings point to the importance of networking platforms and events for those wishing to access financial resources and actors who could be a source of or provide access to others who are looking to invest. This is one of the factors possibly linked to the increase in network reachability of Jordanian female entrepreneurs which was explored briefly in this research; this area would benefit from more in-depth exploration. This represents a promising area for future research relating to the role of networking events in building entrepreneurs' financial networks and attracting investment to their emerging firms. The findings revealed that some participants searched for new financial ties in the early-growth stage utilising their business network ties. Thus, there is a need for studies which focus on the challenges of building financial ties and mechanisms to assist network development.

There are important lessons for actual and would-be entrepreneurs. Increasing network diversity and reachability in the early stages of venture development affect the female entrepreneurs' access to financial ties. In trying to increase their level of access to such ties, the findings show how entrepreneurs can identify the most effective types of ties to target. For example, if a female entrepreneur in Jordan's technology sector wishes to increase the visibility of her business idea and number of contacts with angel investors, engaging with particular types of networking platforms, events, conferences, seminars and competitions, can facilitate reaching these ties.

The study also has implications for policymakers who support the development of entrepreneurs and their ventures. First, increased efforts in building entrepreneurs' networking meetings and clubs by different parties, entrepreneurial business organisations, government business support organisations, private firms and universities, is required. Events clearly provide a good place for building links and network ties between (would-be) entrepreneurs and different types of actor, whether firms, organisations or individuals, which might turn into an opportunity to increase the entrepreneur's visibility and access financial ties. Second, this research suggests that alongside increasing the focus on the technical and managerial aspects of entrepreneurship, training and guidance on how to build and approach different ties should be addressed and courses/programmes designed to help entrepreneurs approach networking in a more structured and strategic way, to make the best use of their time which is a scarce resource in most entrepreneurial ventures. Third, banks should participate in the process through eliminating the barriers that they put in place for those seeking loans which particularly affect women. In addition, alternatives offerings from banks which accord with Sharia principles have to be available for entrepreneurs.

The reliance on using business ties to access financial sources which appears in the networking model of these female entrepreneurs might constrain the economic participation of women as business owners. It seems that without using these business ties, starting a business is challenging for women in Jordan: those women who do not have such links or the disposition to develop them may find their pathway to entrepreneurship blocked. Recently, statistics from some of the technology business accelerators, competitions and incubators have shown an increasing number of women choosing to participate in such competitions and apply to these organisations. Fortunately, in Jordan and the MENA Region, a high percentage of technology business plan competition participants and accelerator candidates are women, exceeding the women's percentage participation figures in many global technology locations (Schroeder 2013). It raises the question as to what happens to, and what other options are available for, women who do not gain access to business agencies or benefit from the ties which they help to forge.

This study has cast light on a number of issues related to the business funding journey of women entrepreneurs in Jordan, but has also raised a number of questions, including whether the experience of women varies from sector to sector as well as from that of their male counterparts. There remain opportunities to explore these and other issues in order to understand better the entrepreneurial experiences of women in societies which have as yet attracted little research attention but where women represent an increasingly important economic force and resource.

## References

- Al Jidara. 2007. *Tracking the Progress of Jordanian Women in the ICT Space*. Amman: The United Nations Development Fund for Women.
- Al Jidara. 2014. *Jordan Women in the ICT Space*. Jordan: United Nations Women. Amman: Country Office for Jordan.
- Al-Alak, B. and Al-Haddad, F. 2010. "Effect of Gender on the Success of Women Entrepreneurs in Jordan." *Interdisciplinary Journal of Contemporary Research in Business* 1(12): 42-62.
- Batjargal, B. 2010. "Network dynamics and new ventures in China: A longitudinal study" *Entrepreneurship & Regional Development* 22(2): 39-153.
- Berger, A., and Udell, G. 1998. "The Economics of Small Business Finance: The Roles of Private Equity and Debt Markets in the Financial Growth Cycle." *Journal of Banking & Finance* 22: 613-673.
- Birley, S. 1985. "The Role of Networks in the Entrepreneurial Process." *Journal of Business Venturing* 1(1): 107-117.
- Birley, S., and Cromie, S. 1988. "Social Network and Entrepreneurship in Northern Ireland." *The Enterprise in Action Conference*, Belfast, September.
- Blaikie, N. 2009. *Designing Social Research*. Cambridge: Polity Press.
- Borgatti, S.P. and Foster, P.C. 2003. "The Network Paradigm in Organizational Research: a Review and Typology". *Journal of Management* 29(6): 991-1013.
- Brush, C., Carter, N., Gatewood, E., Greene, P., and Hart, M. 2001. *The Diana Project: Women Business Owners and Equity Capital: The Myths Dispelled*. Available at:

- <http://www.dianaproject.org/publications/publicationsfordow/> (Accessed: 18<sup>th</sup> April 2012).
- Brush, C., Carter, N., Greene, P., Hart, M., and Gatewood, E. 2002. "The Role of Social Capital and Gender in Linking Financial Suppliers and Entrepreneurial Firms: A Framework for Future Research." *Venture Capital: An International Journal of Entrepreneurial Finance* 4(4): 305-323.
- Burt, R. 1992. *Structural holes: the social structure of competition*. Cambridge: Harvard University Press.
- Butler, J., and Hansen, G. 1991. "Network Evolution, Entrepreneurial Success, and Regional Development". *Entrepreneurship & Regional Development* 3(1): 1-16.
- Bygrave, W., and Hunt, S. 2007. "For Love or Money? A Study of Financial Returns on Informal Investments in Businesses Owned by Relatives, Friends, and Strangers." *The AGSE Entrepreneurship Research Conference*, Queensland University of Technology, Brisbane February 2007. Available at: <http://ssrn.com/abstract=1269442> (Accessed: 18 April 2012).
- Bygrave, W.D., and Quill, M. 2007. *Global Entrepreneurship Monitor: 2006 Financing Report*. Babson College and London Business School: GEM Consortium.
- Capaldo, A. 2007. "Network Structure and Innovation: The Leveraging of a Dual Network as a Distinctive Relational Capability." *Strategic Management Journal* 28(6): 585–608.
- Carter, S., and Rosa, P. 1998. "The Financing of Male- and Female-owned Businesses." *Entrepreneurship & Regional Development* 10(3): 225-242.
- Carter, S., Anderson, S., and Shaw, E. 2001. *Women's Business Ownership: A Review of the Academic Paper and Internet Literature*. Report to the Small Business Service. Available at: <http://www.berr.gov.uk/files/file38362.pdf> (Accessed: 16 January 2015).
- Carter, S., Shaw, E., Lam, W. and Wilson, F. 2007. "Gender, Entrepreneurship, and Bank Lending: The Criteria and Processes used by Bank Loan Officers in Assessing Applications." *Entrepreneurship Theory and Practice* 31(3): 427-444.
- Cetindamar, D., Gupta, V., Karadeniz, E., and Egrican, N. 2012. "What the Numbers Tell: The Impact of Human, Family and Financial Capital on Women and Men's Entry into Entrepreneurship in Turkey." *Entrepreneurship & Regional Development* 24(1-2): 29-51.
- Chamlou, N. 2008. *The Environment for Women's Entrepreneurship in the Middle East and North Africa Region*. Washington: The World Bank.
- Coleman, J.S. 1988. "Social Capital in the Creation of Human Capital." *The American Journal of Sociology* 94: 95-120.
- Coleman, S. 2002. "Constraints Faced by Women Small Business Owners: Evidence from the Data." *Journal of Developmental Entrepreneurship* 7(2): 151-174.
- Coleman, S., and Robb, A. 2009. "A Comparison of New Firm Financing by Gender: Evidence from the Kauffman Firm Survey." *Small Business Economics* 33: 397-411.
- Coleman, S., and Robb, A. 2011. "Sources of Financing for New Technology Firms: Evidence from the Kauffman Firm Survey". In *The Economics of Small Businesses: An International Perspective*, edited by G. Galcagnini and I. Favaretto, 173-194. Heidelberg: Physica-Verlag.
- Dubini, P., and Aldrich, H. (1991) "Personal and Extended Networks are Central to the Entrepreneurial Process." *Journal of Business Venturing* 6(5): 305–313.
- Eisenhardt, K.M., and Graebner, M.E. 2007. "Theory Building from Cases: Opportunities and Challenges." *Academy of Management Journal* 50(1): 25-32.
- Elfring, T., and Hulsink, W. 2007. "Networking by Entrepreneurs: Patterns of Tie Formation in Emerging Organizations." *Organization Studies* 28(12): 1849-1872.

- Fariz, R. 2002. "Innovation Leads to Success: Opportunities for Jordanian Women Entrepreneurs." *The Regional Expert Group Meeting on Enhancing Competitiveness through the Promotion of Innovative Approaches In SMEs*, Manama 10-12 June 2002.
- FYGL and BC. 2011 "Accelerating Entrepreneurship in the Arab World." *World Economic Forum Special Meeting on Economic Growth and Job Creation in the Arab World*, Jordan, October.
- Gatewood, E., Brush, C., Carter, N., Greene, P., and Hart, M. 2009. "Diana: A Symbol of Women Entrepreneurs' Hunt for Knowledge, Money, and the Rewards of Entrepreneurship." *Small Business Economics* 32(2): 129-144.
- Greve, A., and Salaff, J. 2003. "Social Networks and Entrepreneurship." *Entrepreneurship Theory and Practice* 28(1): 1-22.
- Gupta, V., and York, A. 2008. "The Effects of Geography and Age on Women's Attitudes Towards Entrepreneurship: Evidence from the State of Nebraska." *The International Journal of Entrepreneurship and Innovation* 9(4): 251-262.
- Hampton, A., Cooper, S., and McGowan, P. 2009. "Female Entrepreneurial Networks and Networking Activity in Technology-based Ventures: An Exploratory Study." *International Small Business Journal* 27(2): 193-214.
- Hampton, A., McGowan, P., and Cooper, S. 2011. "Developing Quality in Female Networks: A Qualitative Analysis of Female Entrepreneurs in Science, Engineering and Technology-based Firms." *International Journal of Entrepreneurial Behaviour and Research* 17(6): 588-606.
- Hanlon, D., and Saunders, C. 2007. "Marshaling Resources to Form Small New Ventures: Toward a More Holistic Understanding of Entrepreneurial Support." *Entrepreneurship Theory and Practice* 31(4): 619-641.
- Hite, J. 2005. "Evolutionary Processes and Paths of Relationally Embedded Network Ties in Emerging Entrepreneurial Firms." *Entrepreneurship Theory and Practice* 29(1): 113-144.
- Hite, J., and Hesterly, W. 2001. "The Evolution of Firm Networks: From Emergence to Early Growth of the Firm." *Strategic Management Journal* 22(3): 275-286.
- Hoang, H., and Antoncic, B. 2003. "Network-based Research in Entrepreneurship: A Critical Review." *Journal of Business Venturing* 18(2): 165-187.
- IFC and CAWTAR. 2007. *Women Entrepreneurs in the Middle East and North Africa: Characteristics, Contributions, and Challenges*. Washington DC: International Finance Corporation and Tunis: Centre of Arab Women for Training and Research.
- Intaj. 2013. *Jordan's ICT Business Guide*. Available at: <http://www.intaj.net/> (Accessed: 11 April 2014).
- Jack, S., Drakopoulou-Dodd, S., and Anderson, A. 2004. "Social Structures and Entrepreneurial Networks: The Strength of Strong Ties." *International Journal of Entrepreneurship and Innovation* 5(2): 107-120.
- Jarillo, J. 1989. "Entrepreneurship and growth: The strategic use of external resources." *Journal of Business Venturing* 4(2): 133-147.
- Johannisson, B. 1998. "Personal Networks in Emerging Knowledge Based Firms: Spatial and Functional Patterns." *Entrepreneurship & Regional Development* 10(4): 297-312.
- Jordanian Department of Statistics. 2015. *The Unemployment Rate during the Fourth Quarter of 2014*. Available at: [http://www.dos.gov.jo/dos\\_home\\_e/main/archive/Unemp/2014/Emp\\_2014-q4.pdf](http://www.dos.gov.jo/dos_home_e/main/archive/Unemp/2014/Emp_2014-q4.pdf) (accessed: 14<sup>th</sup> February 2015).
- Kazanjian, R., and Drazin, R. 1990 "A Stage-contingent Model of Design and Growth for Technology Based Ventures." *Journal of Business Venturing* 5(3): 137-150.

- Kim, P., Aldrich, H., and Keister, L. 2006. "Access (Not) Denied: The Impact of Financial, Human, and Cultural Capital on Entrepreneurial Entry in the United States." *Small Business Economics* 27(1): 5-22.
- Larson, A., and Starr, A. 1993. "A Network Model of Organization Formation." *Entrepreneurship Theory and Practice* 17(2): 5-15.
- Lechner, C., and Dowling, M. 2003. "Firm Networks: External Relationships as Sources for the Growth and Competitiveness of Entrepreneurial Firms." *Entrepreneurship & Regional Development* 15(1): 1-26.
- Majcher-Teleon, A., and Slimène, O. 2009. "Women and Work in Jordan: Case Study of Tourism and ICT Sectors." *European Training Foundation*, July. Available at: <http://www.silviacambie.com/wp-content/uploads/2010/01/womenwork-in-jordan.pdf> (Accessed: 12 April 2012).
- Martinez, M., and Aldrich, H. 2011. "Networking Strategies for entrepreneurs: Balancing Cohesion and Diversity." *International Journal of Entrepreneurial Behaviour and Research* 17(1): 7-38.
- MHESR. 2013. *The Annual Report on Higher Education in Jordan 2012/2013*. Available at: <http://www.mohe.gov.jo/Statistics/tabid/69/language/ar-JO/Default.aspx> (Accessed: 12 February 2015).
- Miles, M., and Huberman, A. 1994. *Qualitative Data Analysis*. Beverly Hills: Sage Publication.
- Miller, T., Holmes, K., Feulner, E., Gigot, P., Kim, A., Riley, B., Roberts, J., Walsh, C., Lieberman, B., and Bavetta, S. 2011. *2011 Index of Economic Freedom*. Washington: The Heritage Foundation and Dow Jones and Company, Inc.
- Ministry of ICT. 2013. *Jordan National ICT Strategy (2013-2017)*. Available at: <http://www.moict.gov.jo/documents/Final%20Draft%20Jordan%20NIS%20June%202013.pdf> (Accessed: 7 June 2016).
- Moensted, M. 2010. "Networking and Entrepreneurship in Small High-tech European Firms: An Empirical Study." *International Journal of Management* 27(1): 16-30.
- MPIC and UND (2011) *Jordan Human Development Report 2011: Jordan Small Businesses and Human Development*. Jordan: The Ministry of Planning and International Cooperation and United Nations Development Programme.
- Oakey, R. 2012. *High Technology Entrepreneurship*. Abingdon: Routledge.
- Orser, J., Riding, L., and Manley, K. 2006. "Women Entrepreneurs and Financial Capital." *Entrepreneurship Theory and Practice* 30(5): 643-665.
- Peebles, D., Darwazeh, N., Ghosheh, H., and Sabbagh, A. 2007. *Factors Affecting Women's Participation in the Private Sector in Jordan*. Jordan: National Centre for Human Resource Development and Al Manar Human Resource Development Information System Project.
- Reynolds, P., and Miller, B. 1992. "New firm Gestation: Conception, Birth and Implications for Research." *Journal of Business Venturing* 7(5): 405-417.
- Robb, A., and Coleman, S. 2010. "Financing Strategies of New Technology-based Firms: A Comparison of Women- and Men-owned Firms." *Journal of Technology Management and Innovation* 5(1): 30-50.
- Romaní, G., Atienza, M., and Ernesto-Amorós, J. 2012. "Informal Investors in Chile: An Exploratory Study from a Gender Perspective." *Journal of Business Economics and Management* 13(1): 111-131.
- Ruhnka, J., and Young, J. 1987. "A Venture Capital Model of the Development Process for New Ventures." *Journal of Business Venturing* 2(2): 167-184.
- Schroeder, C. 2013. *Start-up Rising: The Entrepreneurial Revolution Remaking the Middle East*. United States: Palgrave and Macmillan.

- Schwab, K., and Sala-i-Martin, X. 2012. *The Global Competitiveness Report 2013-14*. Geneva: World Economic Forum. Available at: [http://www3.weforum.org/docs/WEF\\_GlobalCompetitivenessReport\\_2013-14.pdf](http://www3.weforum.org/docs/WEF_GlobalCompetitivenessReport_2013-14.pdf) (Accessed 7 June 2016).
- Semrau, T., and Werner, A. 2014. "How Exactly Do Network Relationships Pay Off? The Effects of Network Size and Relationship Quality on Access to Start-up Resources." *Entrepreneurship Theory and Practice* 38(3): 501-525.
- Siam, A., and Rifai, F. 2012. "Business Angels Financing of Entrepreneurial Projects in Jordan." *European Journal of Social Sciences* 32(2): 277-289.
- Söderqvist, A., and Chetty, S. 2013. "Strength of Ties Involved in International New Ventures." *European Business Review* 25(6): 536-552.
- Spence, L., Schmidpeter, R., and Habisch, A. 2003. "Assessing Social Capital: Small and Medium Sized Enterprises in Germany and the U.K." *Journal of Business Ethics* 47: 17-29.
- Starr, A., and MacMillan, I. 1990. "Resource Cooptation via Social Contracting: Resource Acquisition Strategies for New Ventures." *Strategic Management Journal* 11: 79-92.
- Steier, L., and Greenwood, R. 1999. "Newly Created Firms and Informal Angel Investors: A Four-stage Model of Network Development." *Venture Capital* 1(2): 147-167..
- Steier, L., and Greenwood, R. 2000. "Entrepreneurship and the Evolution of Angel Financial Networks." *Organization Studies* 21(1): 163-92.
- Stevenson, L., Daoud, Y., Sadeq, T., and Tartir, A. 2010. *Global Entrepreneurship Monitor: GEM-MENA Regional Report 2009: Middle East and North Africa*. Giza: International Development Research Centre.
- Sullivan, D., and Ford, C. 2014 "How Entrepreneurs use Networks to Address Changing Resource Requirements During Early Venture Development." *Entrepreneurship: Theory and Practice*, 38(3): 551-574.
- Timmons, J.A. and Spinelli S. 2009. *New Venture Creation: Entrepreneurship for the 21<sup>st</sup> Century*. Boston: McGraw Hill/Irwin.
- tradingeconomics.com. 2014. Jordan GDP per capita PPP 1990-2016 <http://www.tradingeconomics.com/jordan/gdp-per-capita-ppp> (Accessed: 31 May 2016).
- Wasserman, S. and Faust, K. 1994. *Social Network Analysis: methods and applications*. New York: Cambridge University Press.
- Whittemore, R., and Knafl, K. 2005. "The Integrative Review: Updated Methodology." *Journal of Advanced Nursing* 52(5): 546-553.
- Witt, P. 2004. "Entrepreneurs' Networks and the Success of Start-ups." *Entrepreneurship & Regional Development* 16(5): 391-412.
- Women's Business Forum. 2011. "Women's Access to Finance in the Middle East and North Africa (MENA) Region." *Growing Micro and Small Enterprises: Tackling Financing Obstacles in the MENA Region*, Casablanca 22 February.
- World Bank. 2005. *The Economic Advancement of Women in Jordan: A Country Gender Assessment*. Washington: World Bank Group.
- World Bank. 2012a. *Doing Business 2012 in a more Transparent World: Economic Profile: Jordan*. Washington: World Bank Group.
- World Bank. 2012b. *Country assessment: Jordan*. Available at: [http://www.ebrd.com/downloads/country/technical\\_assessments/jordan-assess.pdf](http://www.ebrd.com/downloads/country/technical_assessments/jordan-assess.pdf) (Accessed: 14 January 2015).
- World Bank. 2013. *Doing Business 2013: Smart Regulations for Small and Medium-Size Enterprise*. Washington: International Bank Reconstruction Development/The World Bank.

World Bank. 2015. *Data: GDP per capita: PPP Current International \$*. Available at: <http://data.worldbank.org/indicator/NY.GDP.PCAP.PP.CD> (Accessed: 8 March 2015).

## Tables

Table 1: Case profiles

<i>Firm</i>	<i>Education level</i>	<i>Pre-entrepreneurial experience (same or relevant field)</i>	<i>Firm age: Year (month)</i>	<i>Technology sector</i>	<i>Participant's start-up*</i>
A	Masters	Yes (No)	2	Digital content	Incubatee entrepreneur
B	Masters	Yes (No)	1(10)	Digital content	Incubatee entrepreneur
C	Bachelor	Yes (Yes)	2	Digital content	Incubatee entrepreneur
D	Bachelor	Yes (No)	2	Digital content	Incubatee entrepreneur
E	Bachelor	Yes (Yes)	2	Digital content	Incubatee entrepreneur
F	Bachelor	Yes (Yes)	2	Digital content	Independent entrepreneur
G	Bachelor	Yes (Yes)	1 (7)	Engineering consultancy	Independent entrepreneur
H	Masters	Yes (Yes)	6	Web/internet services	Independent entrepreneur
I	PhD	Yes (Yes)	4	Research and development	Independent entrepreneur
M	Bachelor	Yes (No)	4	Electronic devices	Incubatee entrepreneur
N	Bachelor	Yes (No)	7	Digital content	Incubatee entrepreneur
P	Bachelor	Yes (Yes)	8	Digital content	Incubatee entrepreneur
Q	Bachelor	Yes (Yes)	1 (5)	Animation	Independent entrepreneur
R	Bachelor	Yes (Yes)	4	Software	Incubatee entrepreneur
W	Bachelor	Yes (No)	3(2)	Digital content	Incubatee entrepreneur
Y	Bachelor	Yes (Yes)	6	ICT consultancy	Independent entrepreneur

\* This research defines the incubatee entrepreneurs as those female entrepreneurs whose firm had been incubated in any organisation at any time of their business life: independent entrepreneurs are those entrepreneurs who had not been involved as incubatees in any type of incubator.



Table 2: The three stages of development of the participants' financial network

<i>Stage</i>	<i>Financial source</i>	<i>Type of finance</i>	<i>Evidence</i>	<i>Network features</i>
Stage 1: Initial start-up	Owner	Personal finance of owner	N, P, R, F, Q, G	Rely on a directly built contact to approach financial sources.
	Accelerator seed fund	Equity finance	C, E, W, B, D, A	Locate financial resources among business ties.
	Venture capitalist	Equity finance	Y	
	Private/public-sector organisations	Competition prizes	M	
	Company-generated internal returns	Self-generated profits	H, I	
Stage 2: Later start-up	Angel investor	Equity finance	N, C, B, E	Business financial network ties.
	Accelerator seed fund	Equity finance	P, R	The newly built start-up business ties provide information about potential financial sources.
	Private/public sector organisations	Grants and competition prizes	M, G, W, R, I	
	No new funds		Q, Y, H, D, F, A	
Stage3: Early-growth	Angel investor	Equity finance	N, Y, P	Network growth and indirectly reached financial ties.
	Venture capitalist	Equity finance	C	Looking for investment from and through business ties.
	Accelerator - second round investor	Equity finance	P, R	
	Looking for investment		E, D, W, F, H, I	Networking events important in promoting connections between entrepreneurs and potential financial sources.